

From: Waggoner, Larry O
Sent: Thursday, October 05, 2006 10:27 AM
Subject: ALARA Center Activities for Week of October 10

Attachments: Cross Contamination Work Practices.doc; Revised OSHA Assigned Protection Factors.doc; Potential Deflagration Hazard from Flammable Liquids.doc
Visit our website at <http://www.hanford.gov/rl/?page=974&parent=973>

The Hanford ALARA Center opened Oct 1, 1996. Our 10th birthday was last Sunday. The ALARA Center was the brainchild of Denny Newland, who was the Westinghouse Radcon Director. He wanted to accelerate the use of good ALARA work practices and was looking for a method to promote better tools, equipment and work practices for radiological work. He hoped that vendors, who sold products to the nuclear industry would loan us their newest and best equipment. We contacted the vendors and almost everyone agreed to display their products at the ALARA Center. Since 1996, ALARA Center personnel have tried to be a resource for ALARA for the Hanford contractors and anyone else we meet. The two of us would like to thank you all for your support with a special thanks to Owen Berglund and JJ O'Connor who worked here before moving on to greener pastures. We would not have been successful if the vendors had not wanted to display their tools and equipment and the contractors would not have sent their workers here. Finally, we would also like to thank our management who have resisted the urge to provide closer supervision when we say or do things without understanding all the implications. We really are trying to do the "right thing". We think the ALARA Center has worked well and we are making a difference on how radiological work is accomplished. Thanks again.

1. Conducted the PHMC ALARA Council meeting for October. Hex-Armor and National Safety demonstrated their line of cut and puncture resistant gloves and showed some new models. PFP was interested in having some shoe covers manufactured with the sole made from the Hex-Armor material. They are puncturing shoe covers when they use a nibbler to size-reduce materials. Apparently, some of the chips from the nibbler are escaping the collection bag. All the Hex-Armor gloves are Level 5, which is the highest rating for cut and puncture resistance. See www.hex-armor.com An article on the selection of cut and puncture resistant gloves is located at the end of this report. It was obtained from the "Industrial Hygiene News" magazine website at <http://www.rimbach.com/scripts/Article/IHN/All.idc?Test=deal> There are several other articles at this website that may interest you.

2. Bill Smoot and I met with Mike Madison of EnergySolutions to discuss the upcoming Workshop on PPE for Performing Work Safely to be given in February at the Waste Management Symposium. Mike heads up one of the sub-committees on safety for the Electrical Facility Contractors Group (EFCOG). His group will provide some assistance with the Workshop.

3. D&D personnel that worked on 233-S demolition called and offered several 5 gallon containers of their left over PBS and Dust Bond fixatives. The ALARA Center agreed to take all they want to give away. We will try and find a new home to some needy facility or contractor. Should have the excess within two weeks.

QUESTION - Do any of the personnel reading this report have any experience with using laser ablation of contaminated paint? If so, we would appreciate knowing your lessons learned and points-of-contact.

FOR YOUR INFORMATION

1. NFS/RPS has completed factory acceptance testing of an automatic speed control designed and installed on the SP 1000 LV and SP 1600. The unit can be set to control the flowrate, which will meet max flow requirement for HEPA filters. The unit will also be capable of alarming at some flow prescribed for capture velocity and also at the filter flow limit. If the unit is set for 800 cfm for example, the

controller will increase the speed of the motor to maintain 800 cfm. The units are being sent to a Nationally Recognized Testing Lab and the testing/validation is expected to be completed in less than 8 weeks. This device will be an option you can get should you decide to purchase the 1,000 or 1,600 CFM Vent units. See www.nfsrps.com

2. Received the September Activity Report from the SRS ALARA Center. Their internal database includes a description of protective clothing and safety equipment available at Savannah River. They are using a Kestral 1000 Pocket Wind Meter to determine air flow in containment tents. See their website at: <http://www.kestrelmeters.com/home.jsp?source=overture-kestrel&engine=overture!443&keyword=kestrel&OVRAW=kestrel&OVKEY=kestrel&OVMTTC=standard> They are using arm sleeves called "Arm Gaiters" during periods when workers need extra protection for their wrists and forearms. This saves putting the workers in an entire extra set of protective clothing. They are made by OREX out of water resistant disposable clothing. They have a double layer of cloth and have elastic on both ends. Contact OREX at www.orex.com or the SRS ALARA Center at <http://www.srs.gov/general/programs/alara>

3. Came across the OSHA Standards for Demolition. See <http://www.osha.gov/SLTC/constructiondemolition/standards.html> Found another website showing the Kingdome being demolished. BHI used this same company to demolish some buildings in the 100 area. See <http://www.controlled-demolition.com/>

4. PFP recently completed repair of the 76,000 ft² roof covering the main Plutonium Finishing Plant. The flat roof, pierced by many protrusions, previously leaked during rain and snow storms. The leaks had begun to rust support members. The old roofing was removed, and a layer of polyurethane leveling foam was added. Polyurea coating was then sprayed to provide a tough sealant. Last week, the ALARA Center recommended using polyurea to coat rusty ventilation ducting at PFP to keep it from leaking. Other Sites have wrapped complex objects with Stretch wrap and sprayed polyurea over the package to provide a strong-tight container for shipping rad waste. It is obvious the use of polyurea is expanding.

5. BHI used a BROKK Demolition machine to D&D the old reactor plants in the 100 Area. Received a package of several CDs from BROKK. These CDs include "Demolish the Competition", BROKK Power Point Presentations, BROKK Video Clips, BROKK Photos and a CD Simulator where you can operate the BROKK, traverse over obstacles, change tools and demolish objects. The CDs are installed on the computer in Room 224 for anyone who is contemplating using the BROKK Demolition Machine. The point of contact for BROKK in the nuclear industry is Tony Marlow in Santa Fe, NM at (505) 466-3614, tmrallow@brokkinc.com or check the website at www.brokk.com.
[Modified photo shows BROKK with multiple tool packages. It really only has one arm, but they call this their "Swiss Army Knife" photo.](#)

IN CASE YOU MISSED IT

Three lessons learned from the DOE are attached. They concern cross-contamination of smears and air samples, potential for fires in gloveboxes and the newly revised assigned OSHA protection factors for respiratory equipment. [See Attachments.](#)

Providing Workers with the Right Combination of Cut Protection

By: By Keitha Kessler
Ansell Marketing Manager – Ergo Products

Cut injuries to the hand and finger area continue to be among the highest incidents for lost work time and indemnity costs among manufacturers. Effectively protecting worker hands from cut injuries involves many factors. When selecting cut-resistant hand protection products, the primary consideration should be the level of cut protection required for the application.

Although any glove material will provide some level of cut resistance, finding the right glove often requires considering factors such as grip, abrasion and puncture resistance, sizing & overall fit. American National Standards Institute (ANSI) performance levels also provide guidance and are derived directly from Cut Protection Performance Test (CPPT) results. CPPT provides data to differentiate the cut resistance of common materials by measuring the weight needed to make a standard blade slice through a protective material in a one-inch stroke.

Below are examples of the types of products that fall within the five ANSI performance levels.

Level 1 >200 grams (most disposable and unsupported rubber, lightweight cotton, PVC-coated and nitrile-coated cotton, heavier cotton and polyester/cotton gloves)

Level 2 > 500 grams (neoprene-coated and natural rubber-coated cotton, lightweight **Kevlar®** gloves)

Level 3 > 1,000 grams (heavier **Kevlar**, nitrile-coated **Kevlar** and extra-lightweight **Kevlar** gloves)

Level 4 > 1,500 grams (medium weight **Dyneema®**, steel-reinforced **Dyneema** and steel reinforced **Kevlar**)

Level 5 > 3,500 grams (steel-reinforced **Dyneema**)

No matter what the level of cut resistance, most glove manufacturers do not recommend using cut-resistant gloves for protection against powered devices such as saws and drills. Gloves are usually tested for use with non-powered blades and tools only.

During the glove selection process, manufacturers should identify any other elements that are required for employees to perform their tasks safely. Do workers, for example, need protection from sharp objects on the back of their hand as well as in the palm area? Workers who are reaching into objects, for example, face the risk of cutting their hands on

sharp edges as they insert and remove their hands.

Are abrasions and punctures a problem? Many gloves are designed to protect from a slash caused by sharp objects but few provide high levels of puncture resistance from objects such as the ragged edges of a sharp piece of metal.

Do workers need gloves that enhance their grip on objects? When workers cannot grasp objects securely—especially those that are wet or oily—the objects may slide through their hands and result in cut injuries.

Is dexterity important? In today's fast-paced manufacturing environment, many employees are working at tremendous speeds and must have the dexterity and tactile sensitivity to quickly handle small, sharp objects.

Are the gloves properly sized for individual workers? Gloves that are too large will slide around on the hands and not provide protection where it needed (they may also slide off). Gloves that are too snug will decrease a worker's dexterity and may become so uncomfortable that workers will remove them. Keep in mind that women, immigrants and older workers have different requirements relative to glove sizes and shapes.



Cut-Resistant Fabrics and Fibers

Several alternatives exist for increasing cut resistance in hand protection products, such as increasing the weight (ounces per square yard) of the material used to manufacture the product. While lighter weight styles are often more flexible, heavier gloves usually provide more protection against cuts and abrasions.

Gloves manufactured with high-performance fabrics such as **Kevlar** and **Dyneema** and composite yarns made with combinations of fiberglass, stainless steel, synthetic and high-performance yarns also increase a glove's cut protection. Below are several types of glove materials and fibers and applications where they may be used.

Kevlar and **Twaron®** are lightweight, high-strength polymers offering a high level of heat resistance. These flexible materials are often used for automotive assembly, sheet metal and glass handling applications where heat is involved.

Dyneema, a synthetic fiber, is 15 times stronger than steel and three times stronger than Kevlar. Gloves made with this fiber are often lightweight, flexible and cool to the hands, and may be used for plastics injection molding, glass handling, sheet metal assembly and handling small, sharp parts.

Interlocked stainless steel mesh is very strong and provides superior protection against cuts and punctures. Gloves made with this material are often used for meat and poultry processing.

Fiber-Metal Blends, such as fiberglass or wire combined with engineered yarns, significantly boost cut resistance for applications such as metal handling.

Steel Core gloves resist cuts and abrasions and are recommended for meat and poultry processing, glass handling, metal fabrication, automotive and applications within the paper industry.



SuperFabric® combines multiple layers of specialty materials with varying thicknesses. Typical applications include metal forming and stamping.

Coatings

Coatings applied to the outside surface of gloves—including the back of the hand—can also enhance cut protection. Gloves may be coated with polyurethane, rubber, nitrile, nitrile foam or vinyl to enhance their grip, abrasion, puncture resistance and oil repellency properties. The coatings listed below offer additional levels of protection when combined with a cut resistant liner.

Natural Rubber has a high level of cut resistance and rough grip.

Nitrile provides a unique combination of snag, puncture, and abrasion resistance along with a good tacky drip grip, which is also oil repellent.

Nitrile foam offers the same unique combination of snag, puncture, and abrasion resistance along with comfort and a good light oil grip.

Polyvinyl Chloride (PVC/Vinyl) has excellent abrasion resistance properties and a good dry grip.

Polyurethane offers excellent resistance to snags and abrasion while providing a good dry & oily grip.

Summary

A variety of cut-resistant gloves are available that incorporate different materials and performance characteristics. To determine the best glove for the application, it is important to determine the hazards involved, the work environment, objects handled and tasks performed. Glove should be evaluated for fit and should be monitored during use to assure they continue to provide the

levels of cut protection required.

For more information about cut-resistant gloves, visit ansellpro.com.

Dyneema® is a registered trademark owned by DSM High Performance Fibers B.V.

Kevlar® is a registered trademark owned by E.I. DuPont de Nemours & Company.

Cutlines

When selecting cut-resistant hand protection products, the primary consideration should be the level of cut resistance required for the application.

Cut-resistant gloves are usually tested for non-powered devices.